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booklets of the netherlands information bureau

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by paul bromberg

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Editor:
THE NETHERLANDS INFORMATION BUREAU

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Dutch architecture has a long and eventful past: even the prehistoric "hunebeds" or tombs in the province of Drente are evidence of that direct and purposeful planning which is still, and perhaps even to a greater extent than before, its dominant characteristic.

Since Dutch architecture has always first fulfilled a functional task, its expressions must be studied in relation to the function which they originally served. In the case of the "hunebeds" that task was the protection of the treasures of the graves, and the visible result is an orderly arrangement of colossal stone blocks. But since the time of that earliest architecture the physical and psychological requirements have been constantly changing; and it is these changes of function which make judgment and comparison of buildings from different eras complicated and often impossible.

Questions as to the relative virtues of Roman and Gothic architecture, or modern and Renaissance, are both tedious and trivial. The important thing is to study each monument as creation and revelation of the culture which produced it. Only then can the masterpieces of the different periods be ascertained and understood.

What is it that has made Dutch architecture so famous? There is, for instance, no trace of that daring and spectacular beauty which characterized the French cathedrals. Even if Holland's soft land had not limited the height of its Gothic buildings, the temper of the people would scarcely have countenanced such extravagance. For the Dutch are by nature modest and self-contained, — attributes which are manifest in their architecture. Baroque exuberance found

itself on alien soil and the Dutch Renaissance remained sober even when luxuriant ornament had overshadowed functional and structural meaning in contemporary Italian work.

In some cases, it is true, sobriety became dullness, but at its best Dutch architecture achieves that harmony between function and form through which purposeful planning becomes aesthetically as well as rationally convincing.

But there is an other reason which has nothing to do with the genius of individual designers, and that is the desire of the people as a whole for appropriate and beautiful architectural surroundings. The dignified old houses which line the Amsterdam canals are typical. They were not designed to meet the special tastes of a Maecenas, but for ordinary alert citizens.

Given an intelligent and sympathetic client, a great architect can sometimes design a building which will become a milestone in the history of architecture. But it is not individual masterpieces which determine the appearance of cities, — it is the general level of building and the relationship between buildings and open spaces, streets and land contours. It is the people who are finally responsible for the aspect of their communities, and if there is no general feeling for formal expression the best of the architects and planners are powerless.

The main reason for the high level of Dutch architecture is the interest and intuitive understanding of the population. In every period the architects have worked upon the broad and healthy base of a sound vernacular building style.

Architecture has always been intimately connected with human life, but it was the enormous growth of cities, the development of motor traffic and the absorption of the

1. Gothic Cathedral at Utrecht. Gothic buildings in Holland, on account of the soft soil, had to be more modest than the French Cathedrals.

2. Houses of Amsterdam merchants of the 17th century. (Heerengracht 170-172).

craftsman and his workshop by the factory which caused questions of city planning and public housing to become questions of life and death. Complicated social and hygienic problems were involved and architects soon realized that their task was not only technical and aesthetic, but scientific as well.

It was the Housing Law of 1901 which made it possible for architects to meet the vital requirements of Holland's great urban population. An outline of this famous law will be found in the appendix, together with a detailed discussion of Dutch housing policy.

Another factor which has affected the quality of Dutch architecture is the law which makes building permits conditional on approval by a "Board of Aesthetics", — something unknown in the United States. The Board has been particularly concerned with street facades, though not at the expense of functional requirements, and its influence is more than partially responsible for the pleasantly urban and homogeneous character of the new sections of Amsterdam.

Elevations and floorplans are, of course, inseparable, particularly in modern architecture, and for this reason a number of important plans and interiors have been reproduced in these pages.

True understanding of architecture must be based on comprehension of the demands with which the architect was confronted. These are not only the wishes of the immediate sponsors, but those more elusive needs which spring from the life and aspirations of the entire community. One of the aims of this booklet is to show that the Dutch architecture of today is just as worthy of serious consideration and appreciation as that of the past. Perhaps the major differ-

ence lies in its concentration on the demands of the community as a whole—and that in itself is no unpromising revolution.

the quality of architecture

Architecture is the art and science of building.

Building was originally only a device for protection against the elements, but as language can go beyond its use as primitive means of communication to become literature, so building can go beyond mere shelter to become architecture. Literature is the enobled development of language; architecture is the enobled development of building. And just as literature must remain understandable language, so architecture must always preserve its direct connection with functional and structural requirements.

Indeed, good architecture has its origin and inspiration in these requirements and its forms are based on physical and emotional needs, upon the nature of materials and their appropriate use in construction. These are the elements which are rationalized by the architect and given coherent and unified expression in his rendering of space.

Sometimes the architect lets his imagination run wild, then tries to tailor his fantasies to the actuality of building materials. The result is scene-painting, not architecture. True architecture is created only when the designer "thinks" in concrete and steel, brick and wood.

19th century confusion

Magnificent new methods of construction were developed in the last century, — reinforced concrete and light steel

3. Rijksmuseum at Amsterdam (1885) by P. J. H. Cuypers (1827-1921). Neo-Gothicism. Cuypers was no slavish imitator of the Gothic style. His major contribution was the revival of a straightforward craftsmanlike attitude toward building.

4. Commodity Exchange by Dr. H. P. Berlage (1856-1934) at Amsterdam (1893-1903) "Toward the end of the century H. P. Berlage was to produce a building which would serve to purify architecture all over Europe, his Amsterdam Stock Exchange. . . . . he gave the wall — until then either chaotically dismembered or deceptively padged together — the reconquered unity of the flat surface." (S. Giedion in "Space, Time and Architecture", Harvard University Press).

trusses of unprecedented span. Mechanized production began to make its impact, while the rapid growth of industrial centers brought serious problems of urbanization. Ultimately these developments could not fail to stimulate the creation of a new architecture; but for a long time technical progress far outstripped the power of society to absorb it, and the new possibilities were unrealized. Because of this difference in tempo, buildings were devoid of organic character and style. Unable to think in terms of the new materials and techniques, architects embellished their senseless structures with wanton reminiscence of other times and places. This imitation of period styles, still prevalent in many countries, was decisive evidence of spiritual immaturity. It was a nineteenth century phenomenon: before that, new materials and structural methods were gradually assimilated, and styles changed by degrees as technics and aesthetics proceeded hand in hand.

Like other countries which participated in the Industrial Revolution, Holland also suffered from this schizophrenia, but in a relatively mild form, as her innate restraint preserved her from its more violent manifestations. The Dutch architects abandoned their fine tradition of straightforward brick construction: under French influence they covered their brick walls with stucco and marble slabs and bedecked them with meaningless plasters.

In the latter part of the century a new and vigorous spirit began to stir in the world. Curiously enough, the first impulse was against the machine, and it was the Englishman, William Morris, and the Frenchman, Viollet-le-Duc, who led the way toward a revival of craftsmanship and honest building in the medieval sense.

The anti-Classic, neo-Gothic doctrines of Viollet-le-Duc were brought to Holland by his pupil, P. J. H. Cuypers,

architect of the famous Rijksmuseum (begun in 1876) and the Central Railroad Station in Amsterdam. Cuypers based his work on the sixteenth century Dutch transitional style, but he was no slavish imitator. Not only did he revive a straightforward, craftsmanlike attitude towards brick, the traditional Dutch material, but he experimented with new materials, although his first application of metal was in a rather romantic and decorative manner. It certainly cannot be said that he founded a new style, but he did help Holland to regain a sense of honest, integrated building. Berlage continued this trend and the result has been the rejuvenation of Dutch architecture.

new recognition of basic principles

New inventions brought a new way of life; unsatisfactory social conditions encouraged new ideologies, and by the turn of the century architects began to realize that the new philosophies of liberalism, democracy and socialism would form the foundation for a new world.

It is this nascent idealism, coupled with a realistic understanding of the function of building, which is manifest in the work of H. P. Berlage (1856-1934). His masterpiece was the Commodity Exchange in Amsterdam, started in 1898 and finished in 1903, and its importance was great, abroad as well as in Holland. Listen to the famous Swiss critic, Dr. Sigfried Giedion:

"One man and a single building announced a new vitality in Holland Hendrik Petrus Berlage (1856-1934) and his Amsterdam Stock Exchange of 1898. Even in his own lifetime Berlage's contemporaries recognized what his unique achievement had been. It was he who first succeeded in realizing, in an actual building, the demand for a purified

architecture. Others had seen the need for morality in architecture, but his Amsterdam Exchange actually embodied the thoroughgoing honesty they had only called for. . . . . What is the source of the great influence exerted by the building? The secret lies in the unshakable consistency with which Berlage strives for sincerity and purity in its architecture. The granite steps of the staircase are only coarsely chiseled out; they are still rough today. The brick arches of the ceilings in the committee rooms are shown entirely without disguise. The iron girders of the framework are emphasized with paint. The clean white joints of the brickwork in the unplastered walls stand out sharply. Used this way—as though for the very first time —these materials act as unexpected decoration." *

Small wonder that, when Berlage visited the United States in 1911, he was deeply impressed with the work of H. H. Richardson, Louis Sullivan and Frank Lloyd Wright, architects of Berlage's own strong and richly creative pioneering spirit. Wright's work had already been published in Germany in 1910, but it was Berlage who, in his writings and lectures, brought him to the special attention of the Dutch, and there is no European country in which Wright was more directly influential. The younger architects learned much from the open planning and the free, horizontal composition of his houses and, as we shall see, found their interplay of independent rectangular planes especially sympathetic.

a special phenomenon

The significance of the Commodity Exchange lies primarily in its honesty and it stands in the mainstream of the devel-

* "Space, Time and Architecture", Harvard University Press. 1941.

5. Settlement Zaanhof at Amsterdam (1914), by M. de Klerk (1884-1925).
6. Shipping Building (1911-1914) by J. M. van der Mey.

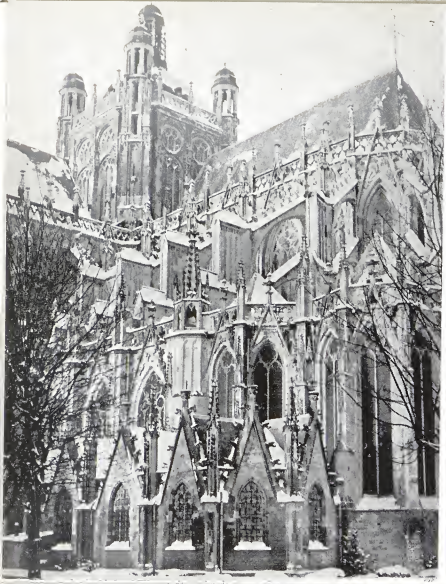
opment of a truly modern architecture; but action breeds reaction, and it was also responsible for a curious offshoot known as the Amsterdam school. This reaction did not express itself in a reversion to "period architecture": imitation of old styles is unknown in the Holland of this century. It was as far removed from traditional Dutch architecture as from the traditional reserve of the Dutch people.

Less interested in Berlage's honesty and restraint than in his bold and novel planning, his emphatic surfaces and fine brickwork, other Amsterdam architects, his contemporaries and juniors, delivered themselves from the discipline of his strict principles and launched into a wildly imaginative expressionism. The Shipping Building in Amsterdam (1913) by J. M. van der Mey was one of the earliest and most extraordinary monuments in the new style. Its concrete skeleton is completely hidden behind its intricately patterned brick exterior.

A leader of the group was M. de Klerk (1884-1925), an architect of genius. The fantastic shapes of his housing projects, superbly convincing in their own fashion, drew the attention of architects all over the world. Unfortunately, however, this architecture was essentially ornamental and the houses were anything but ideal as living quarters.

back to the main stream

Encouraged by a temporary business boom, the extravagant phase of the Amsterdam school was of short duration. With the end of World War I, characteristic Dutch sobriety came again to the fore and architects returned to the basic principle of architecture, — the inseparability of form and function, a principle already old when Berlage built his Commodity Exchange.



7. Gothic Cathedral at 's Hertogenbosch. The great wall openings, made possible by the new construction, were filled with stained glass.

8. St. Servaas Church at Maastricht. 900 A.D. Heavy walls and round arches were needed for the construction.

9. St. Augustinus church at Amsterdam-West by K. Tholens (1940). Modern building technique makes possible a slenderness which could not be achieved in straight masonry construction.

10. B. T. Boeyinga: Dutch Reformed Church, Haarlem 1940.

11-12. G. Friedhoff. Christian Science Church, Amsterdam 1939.

13. G. Friedhoff, Dutch Reformed Church, Amsterdam, 1940.

14. Old houses along the canals, Amsterdam. Photo Carel Blazer.

an old principle

a) in romanesque

Early medieval buildings relied on the support of heavy masonry walls, carried over openings by round arches. Churches and fortresses and living quarters were all stamped with the forthright dignity of this massive construction.

b) in Gothic churches

The development of groined vaulting (rather than continuous barrel vaults) meant the concentration of strain upon isolated points of support and, in Gothic architecture, the thrust was characteristically transmitted to flying buttresses. The wall between the piers, or buttresses, became a mere curtain, and was eventually replaced by great windows of stained glass which filled the nave with heavenly light and revealed the story of the Bible. Function and form were one and the possibilities of masonry construction have never been more daringly and successfully exploited for the delight of mankind.

The church builder of our time has the steel or concrete skeleton at his command and can produce an impressive nave with less trouble and expense than the medieval craftsmen. The results are often fresh and convincing, though without the drama and the rare beauty of the Gothic.

c) in 17th century houses

Lining the Amsterdam canals are the houses of the rich and powerful merchants of the seventeenth century. Originally they were private home, office and warehouse all at the same time. Goods were delivered to the front door in barges and hoisted up into the attic through a large opening at the peak of the roof. Offices and kitchen were in the

15. Painting by Pieter Janssenz. In Renaissance interiors, utility was the starting point and applied ornament was conspicuously absent.

basement, while the first floor was reserved for the reception and entertainment of guests. In spite of their impressive appearance these houses were just as straightforward in their time as the most modern houses of today.

Modern architecture is popularly associated with chilly, factory-like buildings, devoid of charm. On the other hand, period styles are almost invariably considered in terms of beauty and intimacy. But let us look at an interior of the past as depicted by a famous painter of the time.

interiors old and new

In this seventeenth century interior, utility was the starting point. Every object has its use and there are no gadgets or superfluous bric-a-brac. It is not applied ornament which gives the rooms their character, but fine proportions, sensitive use of materials and interesting spatial relationships. The same comment could be made of the modern interiors. Economy of means has always been a sign of artistic mastery, and the principles of three-dimensional composition are eternal, no matter how frequently they may be distorted through wilfullness or misunderstanding.

16. Interior country house at Wassenaar by H. Wouda. When we compare the interiors of the Renaissance with the creations of the best Dutch designers of today we find a startlingly similar approach.

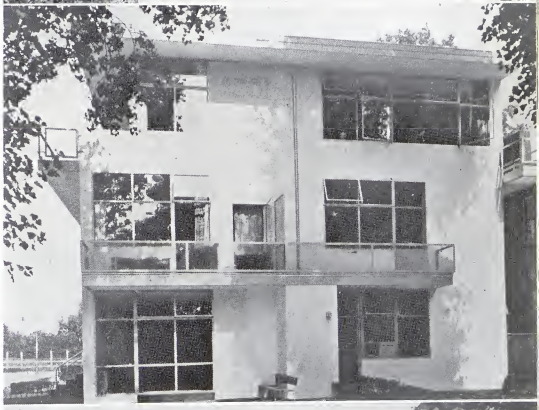
the style group

In 1917 a number of Dutch painters, sculptors and architects, led by the versatile Theo van Doesburg, formed an extraordinarily vigorous and influential group known by the name of its magazine, De Stijl.

Prominent among them was the Cubist painter Mondriaan, in whose work form was reduced to flat rectangular planes of white and primary colors, composed with infinite care and separated by thin, precise black lines. It was this "Stijl"

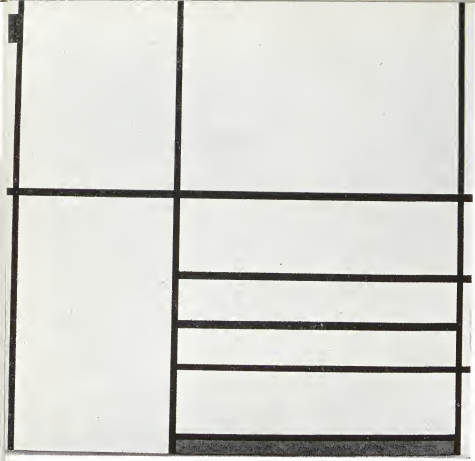
17. G. Rietveld: Interior of country house at Den Dolder near Utrecht.

18. G. Rietveld: Country house at Den Dolder near Utrecht. (interior fig. 17).



19. G. Rietveld: Houses at Utrecht 1931.

20. G. Rietveld and Schroeder: Houses at Utrecht. Prins Hendriklaan.



21. "Composition in White, Black and Red" by Piet Mondriaan. "Mondriaan's pictures have achieved practical results to an amazing extent. They have effected the design of modern architecture" (Alfred H. Barr, Jr. in "What is modern painting?" Museum of Modern Art, New York. 1943).

insistence on the integrity of the flat rectangular plane, fostered by Berlage's treatment of walls as continuous surfaces and encouraged by the strong influence of Frank Lloyd Wright, already noted, which was to have a decisive effect upon the development of architecture, not only in Holland but in all the Western world.

22. G. Rietveld and Schroeder: House at Utrecht 1924. The "Stijl" theories made manifest in architecture.

23. Van Nelle Factory, Rotterdam, by J. A. Brinkman and L. C. van der Vlugt. (1929) The supporting columns of reinforced concrete are recessed to allow continuous bands of glass and, glareless light.

24. Night view of same factory.

25. J. W. Buys: Coöperative "De Volharding", The Hague. (1929). The function of this building is not only to provide space for selling purposes, but also to draw attention to the coöperative movement itself.

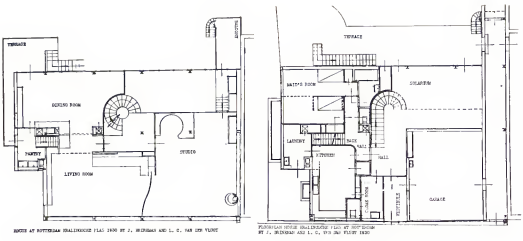
The most immediate expression of the "Stijl" theories in architecture is found in the projects of Van Doesburg himself, and in the executed work of G. Rietveld and of J. J. P. Oud, both members of the group.

"functionalism"

The new architecture had its firm basis in function, but its practitioners were very consciously interested in aesthetics, and very rarely functionalists in the strict sense of that much abused term. For "functionalism" as such denies the art of architecture and substitutes the theory that a building, like a machine, should be simply and neatly the most direct solution to the physical problems of purpose and structure. But human requirements are emotional as well as physical;

26. J. A. Brinkman and L. C. van der Vlugt. Van der Leeuw house, Kralingsche Plas, Rotterdam, 1930. The garage doors open automatically.

27. Interior of same house.



27a and 27b. Floor plans of the house in ill. 26 and 27.

moreover, there is rarely one "most direct" solution, and the architect is constantly confronted with the necessity of choosing between alternative methods of procedure, all of equal technical and functional validity. Even the strict functionalists, most of whom were Dutch, German or Swiss, were more or less consciously influenced by the prevalent aesthetic of the straight line and the flat plane.

Twenty-five years after Berlage's bold attempt to lay the foundation for a new style, Dutch architecture was well established in a proud period of development, based on new concepts of individual and social living and on the scarcely exploited potentialities of the new materials and techniques which were offered by the machine.

crystallization of the new style

Outstanding exponent of the new style was J. J. P. Oud, a disciple of Berlage and of Wright whose connection with the "Stijl" group has already been noted.

In the view of some distinguished critics the importance of his architecural and literary activity in determining the character of the so-called International Style of the 'twenties and 'thirties is only to be compared with that of Le Corbusier. As early as 1921, Oud made this remarkable analysis of an as yet unrealized architectural movement:

"Without succumbing to an arid rationalism the new architecture will be essentially utilitarian; but utilitarian without excluding aspirations of a superior sort. In radical opposition to the familiar sort of production resulting from the inspiration of a moment and devoid of technique, of form and of color, a new architecture will create technically, even quasi-impersonally, works perfectly adapted to the assigned end, clear in form and pure in proportions. In place of the natural charm of walls and roofs of rough materials, unstable in their plasticity and uncertainly patined; in place of windows cut into small panes . . . . . ; a new architecture will offer us the definite values of artificial materials, surfaces polished and finished, the scintillation of steel and the brilliance of paint, the transparent openness of large windows of plate glass, ... Architectural evolution thus will lead us toward a style that will appear liberated from matter, although it is joined with it more completely than ever. Disengaged from all impressionistic sentimentality; dependent on clear proportions, frank colours, plainly organic forms; divested of all that is superfluous; the new architecture will be able to outvie even classical limpidity." as quoted by Henry-Russell Hitchcock, Jr., in Modern Architecture: Romanticism and Reintegration, New York, 1929.

In the 'twenties Oud was City Architect of Rotterdam, and it was in the peculiarly exacting field of low-cost public housing that his principles were realized, — in work of timeless authority and elegance.

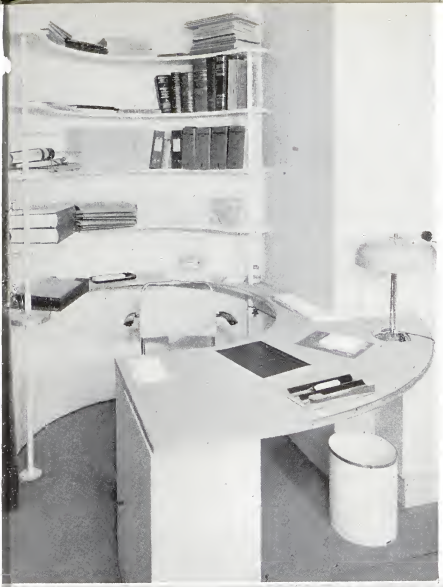
new structural methods

It was skeleton construction which inspired and legitimatized the light and rectiplanar forms of the new architecture. When the load of the building is concentrated on a regular series of isolated steel or concrete columns, walls become mere curtains or partitions. While the size of openings is limited in traditional masonry bearing-wall construction, the entire exterior wall-surface of a skeleton-frame building can be of glass. Holland was one of the first countries to exploit the openness and lightness of new construction. In that rather dreary climate sunshine is all the more welcome for its rarity. Large windows are a necessity and orientation of buildings for a maximum of sunlight becomes a major consideration. The need for abundant light had been stated, at least, in the great two-tiered windows of the seventeenth century. (fig. 39).

The skeleton was nothing new, but the technical invention long preceded its appropriate architectural expression. Only in the tall Chicago office-buildings of the 'eighties and early 'nineties had the formal implications of the steel frame for a time been generally recognized.

An aesthetically mature expression of skeleton construction is the famous Van Nelle factory in Rotterdam, designed in 1929 by Brinkman and Van der Vlugt. The supporting columns of reinforced concrete are recessed to allow continuous bands of glass and even, glareless light.

Another material which the Dutch welcomed with intelligent enthusiasm was glass block, logically used as translucent, self-supporting walls. The building of the "Coöperative De Volharding", built in The Hague in 1929, and designed by Jan Buys, was the first use, anywhere in the world, of glass block as a structural material. At night the



28. A quiet studio of almost closet-like dimensions, arranged for maximum convenience.

29. Attic remodeled as a children's room. Wherever possible, the child was given his own work- and play room designed for him alone, and adults were provided with means for retreat from the bustle and confusion of family life (see fig. 28).

light which streams through the blocks and the steel-framed sheets of transparent glass is effective advertisement for the building and the coöperative movement which it symbolizes.

new living requirements

The manner of Dutch life has changed through the centuries and the old merchants' houses along the Amsterdam canals no longer answer domestic needs. Today they are used only as office buildings. Servants are not available to run such large, inconvenient establishments, and basement rooms are considered unhygienic. Freight shipping on the canals has been abandoned and the attics are no longer needed as warehouses. High ceilings, unobjectionable when people wore warmer clothing indoors, now make the rooms difficult and expensive to heat.

The private house of today must be planned for efficient and comfortable living, and full advantage must be taken of the offerings of modern technics. Holland was early to develop electrical aids to housekeeping and now often 25% of the total cost of a Dutch house goes into mechanical equipment of one kind or another. The function of the kitchen has been analyzed and met in straightforward fashion, and the Bruynzeel factory at Zaandam was early to produce standardized, scientifically designed kitchen units.

Architects realized that dusting is easier when furniture is unornamented, radiators hung on the walls, and dark crannies avoided; and they developed many ingenious devices for the convenience of the housewife. But they were concerned with psychological values as well as with mere efficiency, — with the cheerfulness of abundant sun and light, the freedom of large windows and pleasantly flowing spa-

30. A serving window between kitchen and dining space is a great labor-saver, especially in combination with drawers which open from either side.

tial arrangements. Even the small, compact house was given apparent spaciousness through the use of broad folding doors: bedrooms in the daytime often become part of the general living space. In counterpoint to this prevalent openness went a new respect for the privacy of the individual. Wherever possible, the child was given his own work- and playroom, designed for him alone, and adults were provided with means for retreat from the bustle and confusion of family life.

Ideally, every part of the domestic environment must be re-thought and re-formed, not dogmatically but with all the flexibility which is required to meet the constantly changing needs of human living.

visual consciousness

The cannibal hangs all his possessions on his body, and it is the debased taste which takes pleasure in an interior crowded with meaningless gim-cracks and pretentious knick-knacks. At a higher cultural level comes a consciousness of form in space and an appreciation of clean, straight-

31. Farmhouse of the 18th century near Hilversum as remodeled by Paul Bromberg. The stable door is converted into a huge window and part of the thatched roof is raised to provide more light for the interior.

forward design in which applied ornament is replaced by precise and meaningful shapes, imaginative color and the inherent quality of materials sensitively and appropriately used.

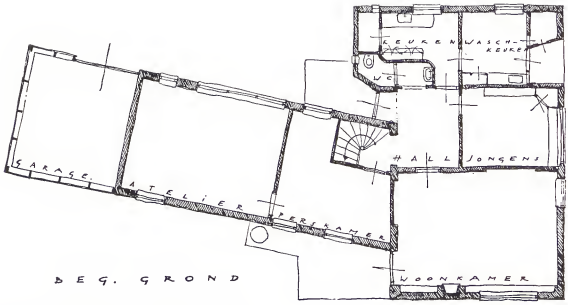
Just as one can see much of a person without emotional contact, so can one live without real contact with one's surroundings. But once that contact is established and one's eyes are open, then it becomes impossible to be satisfied with a second-hand, senseless environment. Then, to take a homely but real example, one is never again content, after moving, to hang one's pictures on nails left by previous tenants.

But insistence on the special attributes of the International Style, — impersonal wall-planes (smooth white stucco rather than durable and traditional brick) and pure geometric forms, no longer seems inevitable in modern architecture.

a less doctrinaire approach

Along with their characteristic sobriety the Dutch have a curiously persistent streak of romanticism, most obvious in

32-33-34. Weekend house at Loosdrecht by Paul Bromberg. (1938). The high south facade traps a maximum of sun, but the north side of the house, facing bitter winds, is built as low as possible. Under the house is storage space. Dining room chairs designed by Mart Stam. Rattan furniture designed by Mrs. Ida Falkenberg-Liefrink.



35. F. A. Eschauzier. Country house at Blaricum.

36. Floor plan of the house of fig. 35.

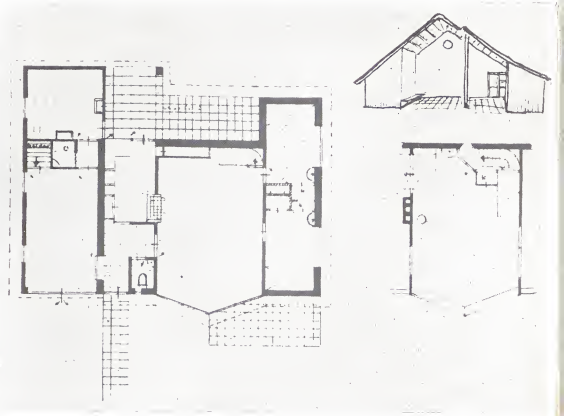
the extravagances of the Amsterdam School. Perhaps it is the reciprocal relationship between functionalism and romanticism which has given modern Dutch architecture its unique character.

There was a certain romantic idealism at work even in the seemingly classic forms of Oud and Le Corbusier. As Elizabeth Mock remarks in the introduction to Built in U.S.A., 1932-44,* the characteristic "non-committal, dematerialized wall planes, absence of projecting cornice, flush doors and flush ribbon windows . . . . were perhaps more valid as formal symbols of Europe's idealization of the machine and the architects' interest in abstract painting than as affirmation of actual materials and construction. . . . . But the machine was to be a tool rather than an ideal, the means of architecture rather than its end. . . . . In every country architects of the most varied theoretical positions have left the aggressively impersonal wall planes . . . . . for a strong emphasis on the nature of materials in construction, and the articulation of form on a basis of widely varied types of construction."

The impulse is toward a friendlier architecture, more organic in its response to human needs.

A major regenerative influence in almost every country has been a reappraisal of traditional folk-building and its direct use of native materials. Extraordinary evidence of the extent to which the strict doctrines of the 'twenties have been relaxed in Holland, is the country house which the avant-garde architect Rietveld designed in 1940 for Willem Penaat, pioneer designer of modern furniture. Here, in new and extremely sophisticated form, is a restatement of the rural vernacular of brick and wood and thatch. Each

*The Museum of Modern Art, New York, 1944.



37-38. Country house at Tongeren by G. Rietveld (1940). Floor plan of the house fig. 37.

material is sharply defined in use, even to the arched windows which pierce the massive brick walls. The bold and effective contrast of black and white is traditional in the northern countryside.

public buildings

In our discussion of the stylistic development of modern architecture we have concentrated largely on private houses, as their relatively simple programs make them easier to analyze and compare than public buildings, which have more complex and less familiar problems.

But, as we have remarked, the Dutch have been particularly concerned with social problems, — with low-cost housing and city-planning, and with buildings for the use and enjoyment of the public. It is here that architecture, in its close and constant contact with the daily lives of the people, can exercise a strong cultural influence. This was recognized by the Government shortly before the German invasion with an allowance for each government building of 2% for the collaboration of artists.

the city hall

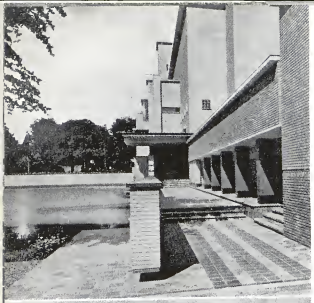
The city hall has the special problem of monumentality, and it is interesting to see how this has been met in Holland. One of the most famous is in Hilversum. The architect, W. M. Dudok, was influenced by Frank Lloyd Wright, but cannot be considered an imitator. His manner of fitting geometrical elements into a design is always dependent upon his personal interpretation of the specific problems which are involved.

39. Frans Hals Museum (formerly Home for the Aged) in Haarlem. By Lieven de Key 1608.

40. "Mauritshuis" in The Hague by Pieter Post and Jacob van Campen. 1663. Restored in 1718.

41. A. van der Steur: Boymans Museum, Rotterdam, 1935.

42. Interior of the museum.



43-44-45. W. M. Dudok: City Hall at Hilversum, 1928-1930. A building which expresses its social importance.

46. G. Friedhoff: City Hall at Enschede.

47. City Hall at Haarlem. 15th century.

48. City Hall at Gouda. 1447-1450
restored 1874-1884.

The city hall in Enschede, designed by Friedhoff, is another impressive solution. Swedish influence is apparent, but the building has a strong character of its own.

museums

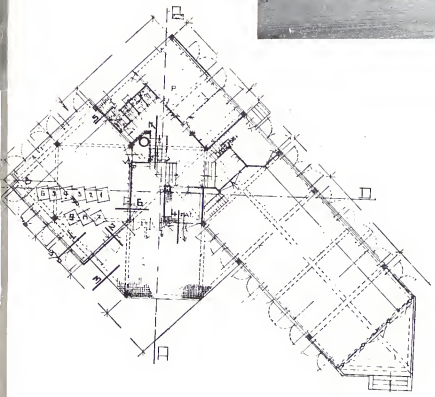
The museum as a building type dates only from the last century. Old mansions and castles had previously served the purpose. The famous museum in The Hague, the Mauritshuis, was orignally a palace for the Princess of Orange. And the wonderful old Frans Hals Museum was built in 1608 as a Home for the Aged. Small wonder that neither of these fine buildings is well adapted to its present use.

Today the museum is more than a storage place for objects of art. With its imaginatively displayed and constantly changing exhibitions it has become a lively adjunct to modern living, and needs an architectural form of its own. The outstanding Dutch example to date is the Boymans Museum in Rotterdam (1935), designed by A. van der Steur. Of special interest is the controlled natural lighting, and the flexible floor plans of some of the galleries — made possible by movable partitions.

schools

A public building type of utmost importance is the school. Ideally, its design should encourage the child's awareness of good architecture as well as foster the particular method of education. Theories of progressive education, developed with great enthusiasm in Holland, and the new principles of hygiene played together in their demand for new and suitable school buildings.

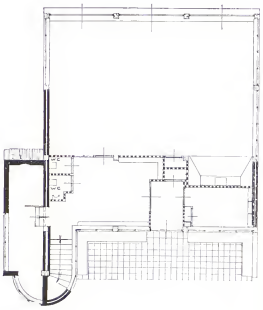
49. P. Bijvoet and J. Duiker: Open air school at Amsterdam 1930.

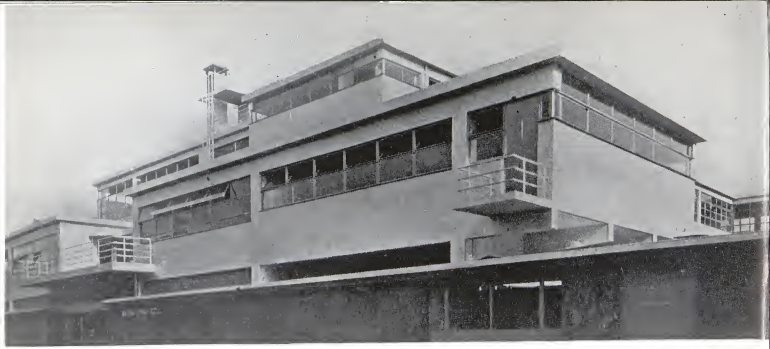


50. Floor plan of Open air school.

51. J. H. Groenewegen: Montessori school at Bloemendaal, 1931.

52. Floor plan of Montessori school.



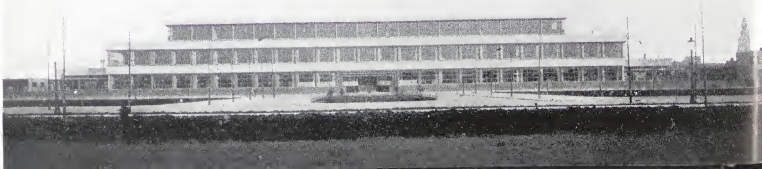


53. J. Duiker: Trade school at Scheveningen.

One interesting and unprecedented result is the open-air school (1930) of Bijvoet and Duiker, designed to preserve the good health of normal children. The open walls are made feasible by the concrete frame and by the radiant heating apparatus incorporated in the ceiling of each room. The idea is to heat the people and objects directly rather than the air about them, which can be kept at low temperature without discomfort. This was an early and notable experiment, based on a method of heating which is only now beginning to come into general use.

Less revolutionary, but just as sensible and straightforward, is the handsome school by Wiebenga at Aalsmeer.

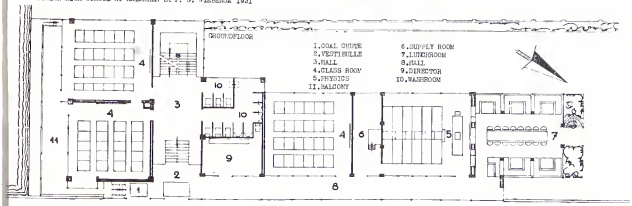
54. J. G. Wiebenga and L. C. van der Vlugt: Trade school at Groningen.

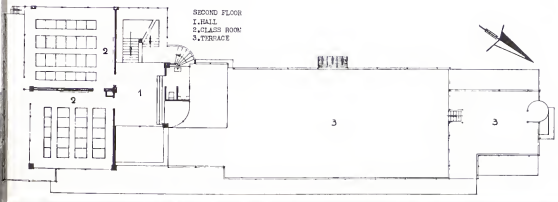


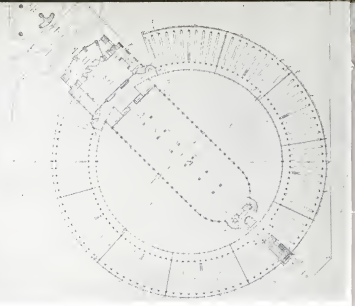
55-56. J. G. Wiebenga: Elementary school at Aalsmeer 1931.

57. Ground-floor plan: 1, coalchute, 2, vestibule, 3, hall, 4, class room, 5, physics, 6, educational appliances, 7, lunch room, 8, corridor, 9, director, 10, lavatory, 11, balcony, second floor plan: 1, hall, 2, class room, 3, terrace. A handsome example of utilitarian architecture. A straightforwardly designed school bears little resemblance to the conventional school-building.

JUNIOR HIGH SCHOOL AT AALSMEER BY J. G. WIEBENGA 1931







58. D. Roosenburg: State Security Building at Amsterdam, 1939. The low circular front is used for the storage of records and its unusual shape is conditioned by the conveyor belt which carries the files into the lofty block of offices.

59. Floor plan.

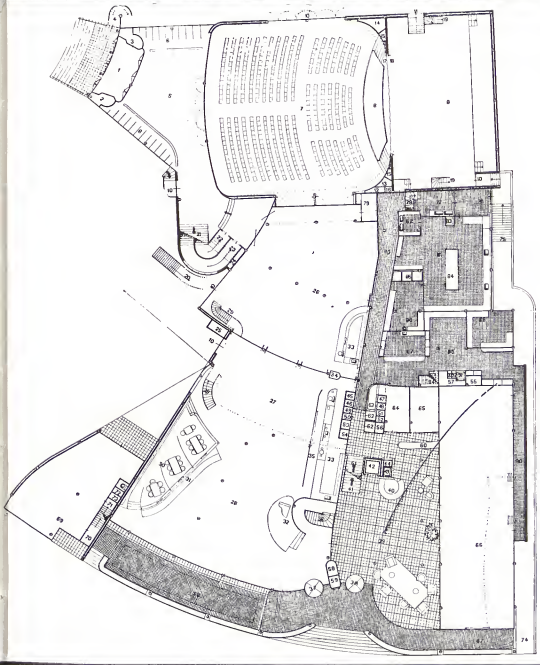
other building types

The requirements of each building problem are different, and directly reflected in the varied forms of modern Dutch architecture. The low, circular front of the State Insurance Bank (1939) in Amsterdam, designed by D. Roosenburg, is no mere trick of decoration. This part of the building is used for the storage of records, and its unusual shape is conditioned by the circular conveyor belt which carries the files into the lofty block of offices.

The delightfully curving forms of the Gooiland hotel and theater in Hilversum, by J. Duiker, are also the result of a practical consideration: that each room get as much sun and view as possible.

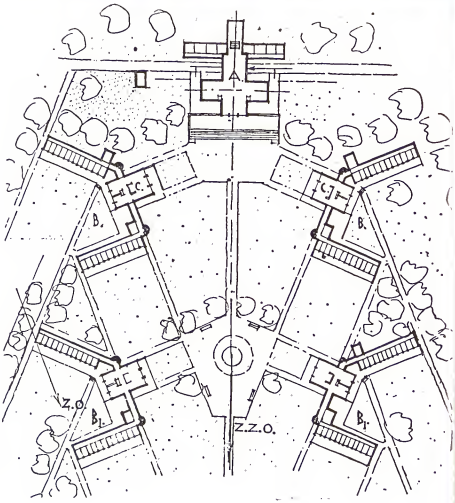
Designed by the same capable architect is the Zonnestraal sanatorium in Hilversum, founded by and for the diamond workers of Amsterdam. The spread-out, zig-zag plan gives each patient an unusually large share of the peace and quiet of the surrounding woods.

60. J. Duiker: Hotel-Theatre "Gooiland" at Hilversum. The bent facade allows sun and view for each room.



61. Floor plan.

62. J. Duiker: Boiler room of the Sanatorium "Zonnestraal" at Hilversum.



63. Floor plan. The spread-out, zig-zag plan gives each patient an unusual large share of the peace and quiet of the surrounding woods.

architecture as a cultural factor

Public buildings are reflections of culture and, if well designed, are an educational factor in raising the cultural level, but it is housing which has the most immediate impact upon the public.

The new architecture aims to materialize the benefits of the social evolution, and one of its essential tasks is the promotion of human freedom. Freedom of the press, freedom of religion, freedom from want — these are not enough. Our surroundings, too, must be such that we can live freely.

public housing

Housing has been a major Dutch preoccupation ever since the passage of the Housing Law of 1901, a model piece of legislation which is still the basis for activity. In proportion to its population Holland has been more active in public housing than any other country in the world. Moreover, it has achieved lower rents in proportion to wages, — and this at relatively low cost to the government. According to the American authorities, Reed and Ogg, "each year there were approximately 37,000 dilapidated houses replaced. Holland put up 200,000 new dwellings financed by public funds. For the United States that would mean 3¼ million houses."*

This remarkable record was made possible by intelligent planning, efficient administration, popular coöperation and large-scale construction.

financial arrangements of public housing

Under the Housing Law, local public-utility housing socie-

* "New Homes for Old", by Reed and Ogg. New York, 1941.

ties are able to obtain building credit on favorable terms from the State, through the intervention of responsible local housing authorities. When necessary, the low-interest federal loans are supplemented by a subsidy in the form of a lowered interest rate, but these subsidized houses may be let exclusively to a) families forced to vacate dwellings which have been condemned or evacuated, b) families from old, unhygienic houses and c) families from overcrowded dwellings. A further requirement is that each family be too poor to pay the normal rent for decent housing.

It costs about 3,275 florins ($1736) to build the average Dutch minimum-standard dwelling, and the weekly rent, with the assistance of subsidy, is 4.50 florins ($2.40). The lowest weekly rent which can be achieved in Amsterdam without subsidy is 6.75 florins ($3.60).

the housing shortage

The population of Amsterdam normally increases by 3200 families every year. Under the slum-clearance program, about 800 dwellings were condemned annually, and about 500 other new units needed as substitutes for altered or demolished buildings. Consequently Amsterdam alone under normal circumstances needs at least 4500 new houses per year. Bear this in mind when considering the present situation on a national scale. Even before the battles of liberation, the war brought the destruction of 150,000 houses through bombing, fire and wrecking, and at the same time has put a stop to all new construction. As a result, Holland will face a shortage of about 350,000 houses at the end of the war, not including the destruction caused by the battles raging in Holland while this booklet is being written.

good housing promotes good health

Improved housing conditions have done much to benefit the health of the Dutch people, especially in regard to tuberculosis: in 1901 there were 19 cases per 10,000 inhabitants; in 1939, only 5 cases per 10,000. But during German occupation the figure has taken a sharp turn for the worse. Better housing has also contributed to the startling decrease in alcohol consumption: from 5.9 liters of pure alcohol per person in 1890 to 2.4 liters in 1932, a very low figure in comparison with neighboring countries. The number of bars in 1890 was one for each 82 inhabitants; in 1939 it was only one for each 700 inhabitants. Another even more direct result is a decrease in juvenile delinquency.

other results of the Housing Law

One unusual and excellent stipulation of the 1901 Law is that each town of more than 10,000 people make a master plan for its own reform and extension, and build its housing in accordance with the broad and rational principles of development thus established.

The law also made it possible for the first time for capable architects to employ their talents in the hitherto impracticable field of low-cost housing.

privately-financed housing

The Housing Law facilitated the public expropriation of land for housing purposes, and granted the municipality other powers which enabled it to dictate the general location of private housing developments and supervise their design, — the latter with the assistance of architects appointed by the Board of Aesthetics. Under these condi-

tions, private housing shows the same admirable qualities as the public projects and the wasteful, essentially unrealistic practices of typical "speculative builders" in other countries are avoided.

the Amsterdam competition

In 1936 the city of Amsterdam staged an important competition for the best low-cost housing plans. The conclusion was that houses in widely spaced rows are the best guaranty for adequate sun and air. This took into consideration the Dutchman's traditional love for his own house and garden as well as the wastefulness of detached houses. It is the one-family house which accounts for 80% of Dutch housing.

minimum standards in public housing

The competition also resulted in new solutions to the individual house-plan. It was realized that a broad facade makes possible a smaller floor area without sacrifice of livability. If a house is twenty to twenty-four feet wide, a well-working plan can be made with only 200 square feet of floor area. The minimum area of a Dutch living room is legally 54 square feet, but even that can be reduced without scruple if other rooms are so related to it that they can form one real or apparent unit. This is often effected by transparent, movable or half-high partitions. The relationship between kitchen and living room also came in for careful study, and folding beds (popular in Holland) made further saving of space. Measurements lose some of their compelling importance when the available space is efficiently and imaginatively exploited.

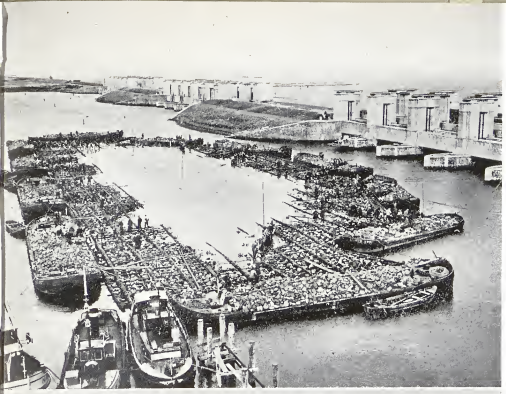
64. J. F. Staal: Skyscraper Daniel Willinkplein, 1931, Amsterdam. The building of skyscrapers on reclaimed land is far more difficult than building on a rock.

65. Former City Hall of Amsterdam, now the Royal Palace by Jacob van Campen (1595-1657). It is supported by no fewer than 13,659 piles. Since 40% of the soil of Holland lies below sealevel, the majority of buildings must be carried on piles.

66. The method of pile driving is substantially the same as centuries ago.

67. Map of Holland.

68. The Zuider Zee Dike. "Examples like these, of the Dutch reclamation of the Zuider Zee polders, which increases by 10% the arable surface of the whole country . . . . . prove that large-scale planning involving vast areas (543,400 acres) is not a dream for tomorrow but an immediate possibility for today." (J. L. Sert in "Can our cities survive?"



69-70-71. Reclamation of the Zuider Zee.

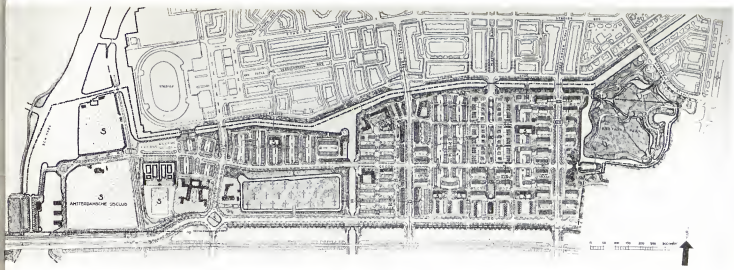
The prescribed nine-foot ceiling can be brought down to eight if windows are large and high. This cuts construction and heating costs and gives a better angle to the staircase. Finally, it was decided that a finished basement offers many advantages over attic space for storage, laundry, drying, playing and working.

Perhaps the large population and the relatively small area of the country have made the Dutch overly concerned with minimum standards. Not only the house-plans but the land use is often far from generous: sometimes seventy families or more are lodged on a single acre. But there are compensating virtues, and we might well quote the American housing expert, Catherine Bauer, who compares public housing in Holland and England: "On any mathematical basis, the Dutch housing is not as good as the English. There is much greater density on the site, gardens and dwellings are both smaller, and there is far less ingenuity and spaciousness in the layout of streets and open spaces. And yet most of the Dutch work has a dignified and affirmative quality, perhaps inherent in its close economical neatness and admirable craftsmanship, which is lacking in all but the very best English housing. A school or a café or a public bath-house or two shops or a playground always seem to be really a central point, giving communal form to the whole neighborhood."*

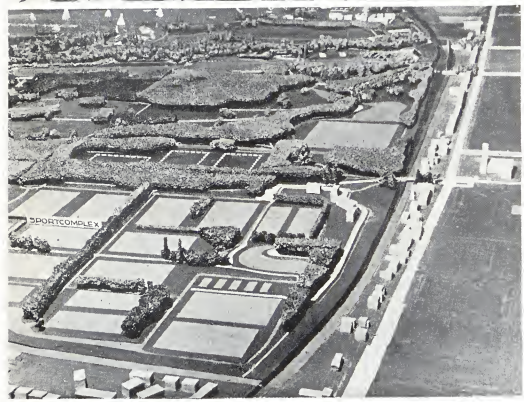
land reclamation

Miss Bauer also admires the extraordinary "coöperative realism" of the Dutch people: " 'Neo-technic' planning probably begins with the Dutch dikes and the systematic reclamation of the polders, just as the draining and development of the bottom of the Zuiderzee is one of its most interesting manifestations today." *

*Modern Housing by Catherine Bauer, Boston and New York, 1934.



72-73. Expansion plan for Zuider Amstelcanal, Amsterdam. Houses and south-facing apartment houses are so arranged that a great deal of land is left as public park, easily accessible from all dwellings. "The city of Amsterdam has been for the last few decades a centre of modern town planning. Amsterdam is one of the very few places where official planners have been allowed to apply modern principles when designing the extension of the city". (J. L. Sert in "Can our Cities survive?" 1942. The Harvard University Press.)



74-75. Extension plan for the Sloterlake section of Amsterdam. Model showing part of the proposed plan. (Black Star photos, New York).

76. Extension plan for the Sloterlake section of Amsterdam. "This plan is the product of a complete analytical study of future needs and trends in that city." (J. L. Sert in "Can our Cities Survive"?) detail of model showing high buildings near the lake.

Forty per cent of Holland's soil lies below sea level, and construction on the soft, reclaimed land is difficult, even when the building does not pretend to be a skyscraper. For many centuries the solution has been found in piles, and the method of pile-driving has changed little over the years. A seventeenth century poet called Amsterdam "an upside-down forest", and Dutch school-children know the exact number of piles that support the Royal Palace in Amsterdam, formerly the Town Hall: 13,659, or the number of days in the year sandwiched between a one and a nine. In the endless struggle against water the Dutch engineer has become expert at the peaceful reconquering of land. The most impressive work to date has, of course, been the conversion of 180,000 acres of the Zuiderzee into fertile meadows.

expansion plans for Amsterdam

Next to the reclamation of the Zuiderzee, the most ambitious Dutch undertaking is the plan for the expansion of Amsterdam, a plan originally drawn up by Berlage, but since then changed and developed by Van Eesteren and his staff of municipal architects. Partly executed before the German occupation, the plan embraces two large new communities, Zuider Amstelcanal and Sloterlake.

In the former, houses and south-facing apartment houses are so arranged that a great deal of land is left as public park, easily accessible from all dwellings. There are no closed interior courts. One building is specially planned for single people, another for the aged. Next to the highway, behind the row of trees, will be a 14-foot bicycle path and a footpath of the same width — evidence of the Dutchman's love for walking and cycling. An outdoor swimming pool is also provided.

77. Extension project Amsterdam, Sloterlake. (See explanation chart on opposite page.)

SYMBOLS		apartments on top of each other	Stories	floor area of each apartment in square feet	width of façade in feet	depth of building in feet	distance between the buildings
	TYPE A APARTMENTS	1	1	860	1417	25	53
	TYPE B APARTMENTS	1	1	918 min. 972 max.		28	53
	TYPE C APARTMENTS	1	2	1080 min.	1827	31½	63
	TYPE D APARTMENTS	2	2	756 max. plus attic		31½	63
	TYPE E APARTMENTS	2	2	810 min. plus attic		31½	63
	TYPE F APARTMENTS	2	2	1136 plus attic		35	
	TYPE G APARTMENTS	4	4	810 plus attic		36	87
	TYPE H APARTMENTS	4	4	918 plus attic		36	87
	TYPE H' APARTMENTS	4	4	918 plus attic		31½	
	GARDEN						
	PREMISES WITH GARAGE	12	12 1				
	HOMES FOR THE AGED	2 1	2 1				
	STORES		1				
	STORES ON GROUND FLOOR						
	PROTRUDING GROUND FLOOR FOR STORES						
	PROTRUDING REAR BUILDING FOR STORES						
	INDUSTRY ON GROUND FLOOR						
	REAR BUILDING PERMITTED FOR INDUSTRY						

SYMBOLS	
	industry; max. height 7-22 ft
	industry; building height 53 ft
	underpass
S	public buildings
S	public buildings max. building height 31½ ft
M	market
S	playground
G	parks
	victory gardens
	bathing
	watersport
	water
	footpath traffic bicycle path
	railway site
RU	sewer filtration
SP	railway site with roads

"Our example—for the period between 1900 and our day—will be Amsterdam.—Amsterdam is one of the few cities of our times which shows a continuous tradition in town planning, unbroken since 1900 . . . Amsterdam is thus the city best adapted to a study of the main currents working through the period. Town planning in Amsterdam operated within the realm of what was really possible! (S. Giedion in "Space, Time and Architecture", The Harvard University Press, 1941)

78-80. Extension project Amsterdam. (prepared by the C. I. A. M.)

Slums
Low-income housing
Low-class detached dwellings with gardens
Middle-class dwellings
Middle-class dwellings with gardens
High-income dwellings
Business areas
Industry
Public buildings
Central market
Docks and warehouses
Oil docks
Timber docks
Steamship lines
Wooded areas
Parks

Allotment gardens
Sports grounds
Pools and beaches
Nautical sports
Yachting harbors
Zoölogical gardens
Cemeteries
Railways
Railway yards
Date of construction
Dwellings to the hectare
Number of stories
City and town lines

(First column of symbols: existing elements. Second column: projected elements.)

81-93. Extension project Amsterdam (prepared by the C. I. A. M.)

Main roads and streets	
Secondary roads and streets	
Boulevards and parkways	
Freight railroads	
Local railroads	
Passenger stations	
Freight stations	
Subway routes	
Streetcar routes	
Suburban railroads	
Bus routes	
Bus stations	
Coastwise shipping	

Ferries	
Boat lines on canals or rivers	
Principal steamship routes	
Airports	
Seaplane bases	
Express traffic	
Slow traffic	

Residential zones

Suburban dwellings

Number of commuters

Industrial areas

Small farms

Open areas (public)

Park lands (not public)

Public recreation

Wooded areas

Nautical sports

Beaches

City line

Main highways

Secondary roads

Railroads (main lines)

Suburban railroads

Streetcar lines

Bus routes

Cross sections of highways (express traffic)

Local traffic

Streetcar routes

Cyclist trails

Pedestrian paths

Mixed traffic

Navigation lanes (local)

Main steamship lanes

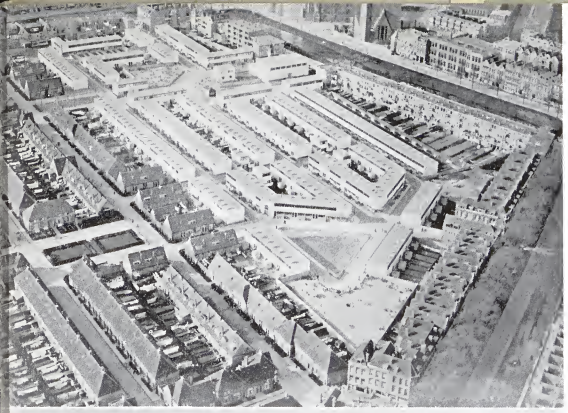
Airports

Seaplane bases

Direction of traffic

Cross section designed for study

84-86. Extension project Amsterdam (prepared by the C. I. A. M.)



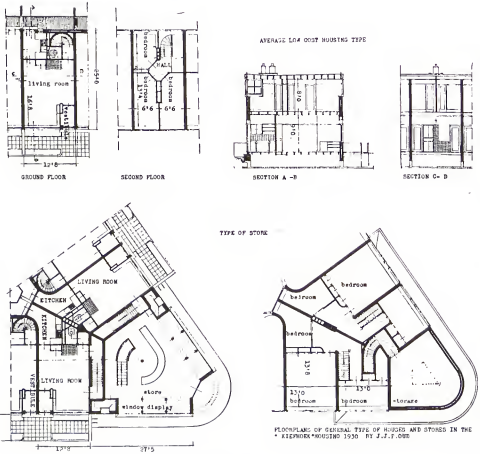
87. J. J. P. Oud: Airview of Kiefhoek development, Rotterdam 1930.

88. J. J. P. Oud: Church in the Kiefhoek housing at Rotterdam, 1930.

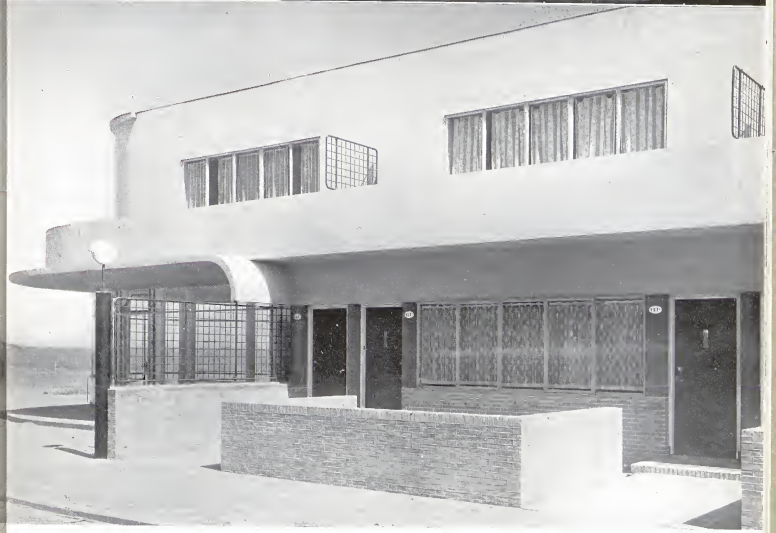
89. J. J. P. Oud, dwellings in Hoek of Holland, near Rotterdam, 1927. Here the theories of Oud were brought to their most eloquent realization.

90. J. J. P. Oud: Housing in Rotterdam, 1927.

91. J. J. P. Oud: Housing in Rotterdam, 1927.

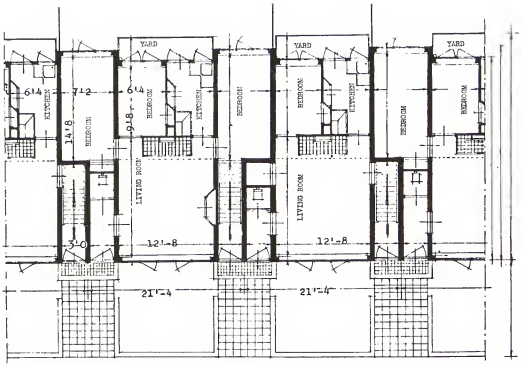


92. J. J. P. Oud: Typical plans of the Kiefhoek houses, Rotterdam, 1930.



93. J. J. P. Oud: Hook of Holland housing development. 1924-1927.

94. J. J. P. Oud: Oud-Mathenesse semi-permanent housing development. 1922. Fire station.



LOW COST HOUSING AT "HOOK OF HOLLAND" BY J. J. P. OUD 1927

94a. Floorplan of houses fig. 89.

The other project, Sloterlake, combines the freedom and the greenery of the country with the convenience of the city. Commuting will be painless, as no house will be more than 4½ miles from the center of Amsterdam, yet main traffic arteries by-pass the town completely. The western part of the project is planned for low-rent housing, with 28 dwellings per acre. In an effort to conserve a sizable portion of the land as open green area, 60% of the buildings will have four or more stories. In all, 11,000 houses are planned, of which 43% will have one or two stories while the remainder will have four stories or more. Thirty-two per cent are one-family houses; the other dwellings are apartments.

Oud's work in Rotterdam and Hook of Holland

It was in the Oud-Mathenesse (1922) and Kiefhoek (1928-30) settlements in Rotterdam and in the famous group of

95. The rural tradition of architecture in the gardenvillage, Vreewijk, near Rotterdam. Built in 1916 by Prof. M. S. Granpré Molière, P. Verhagen and A. J. Th. Kok.

96. Municipally built low-cost houses on the north side of the Y-harbours of Amsterdam, 1928-29. By J. Boterenbrood. Rent $2.40 weekly.

97. Slums of Amsterdam. "Each year there were approximately 37,000 dilapidated houses replaced. Holland put up 220,000 new dwellings financed by public funds. For the United States that would mean 3¼ million houses". (Reed and Ogg in "New Homes for Old").

98. The old sections of Amsterdam are delightfully picturesque, but something less than satisfactory for the people who must live there. "The Netherlands have been more active in housing matters in comparison with their population than any other European country". (Architectural Forum).

99. Bird's-eye view of the Merwede Square in Amsterdam South.

100. Part of Amsterdam West. (K. L. M. photo).

workers' houses at Hook of Holland (1926-27) that the architectural theories of J. J. P. Oud (see page 31) were brought to their most eloquent realization. The Hook of Holland houses deserve careful study. Notice in particular the flat roofs, the balconies, the broad beautifully proportioned windows set flush with the smooth planes of the stucco and brick walls, the meaningful form of each detail, the exposed concrete columns in the corner shops, and the subtle rhythm of the whole.

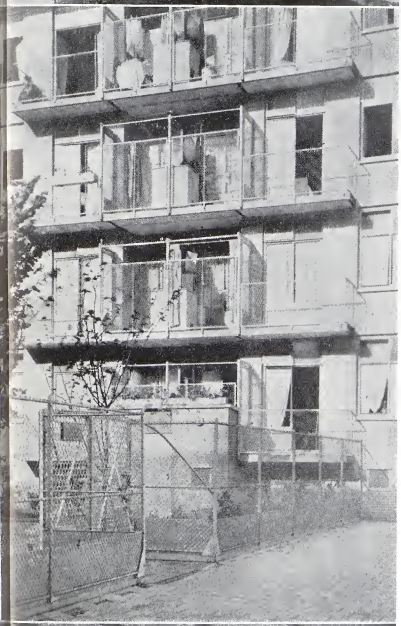
other architects worked from the vernacular

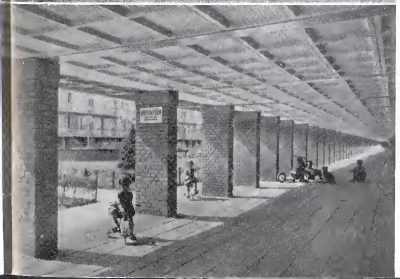
In contrast to the fresh, non-traditional approach of Oud, the majority of the architects based their housing designs upon the simple traditional forms and fine brickwork of the native vernacular. With their substantial brick walls, emphatic roofs, conventional fenestration and simplified details, these houses have dignity and considerable charm.

The office of Granpré Molière, Verhagen and Kok deserves special mention for their housing projects in the neighborhood of Rotterdam. The annual rent of these low-cost houses is about $145, excluding not only water, heat and light, but sinks, bathtubs, showers and lighting fixtures. In Holland tenants supply these items themselves. Moving days are for that reason more complicated than in the United States, although the general use of hoist beams is a great help. Nothing is carried up the staircase; instead, each object is hoisted up through the windows with a skill which foreigners find rather impressive.

urban solutions to the housing problem

Garden villages on the outskirts of the great cities are not the only answer. The interiors of the cities must gradually

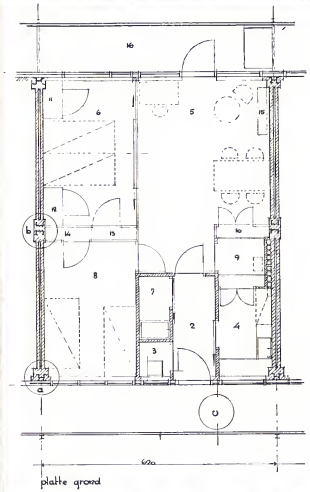




101-103. Merkelbach and Karsten: Low-cost apartments, Amsterdam. The buildings are raised from the ground on columns to provide space beneath for sheltered rainy-day play space. Storage of bicycles is a problem in Holland, where three out of five people have bicycles.

"The architects aimed at offering the tenants the greatest possible amount of comfort. The living room is given broad French windows at the front, so that the house can be thrown wide open in the summer time, and to facilitate moving. That the settlement meet existing demands is shown by the sixteen hundred applications that poured in for these 208 apartments at the time they were opened (S. Giedion in "Space, Time and Architecture").

104. W. van Tijen, H. A. Maaskant, J. A. Brinkman and L. C. van der Vlugt: Bergpolder apartment in the Abram Kuyperlaan, Rotterdam, 1934. Low-cost living quarters.



1. entrance
2. hall
3. W. C.
4. kitchen
5. living room
6. bedroom with folding bed
7. storage
8. bedroom
9. laundry
10-14. closets
15. cupboard
16. balcony

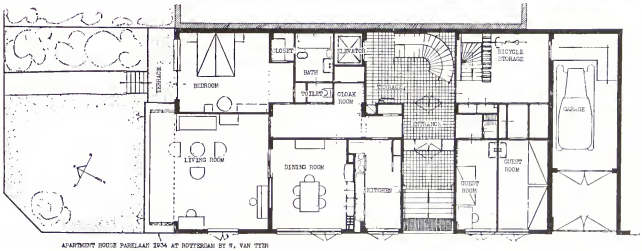
105. Floor plan of apartments.

106. Interior of fig. 104, 105 designed by G. Rietveld. Sliding doors can make one room out of two.

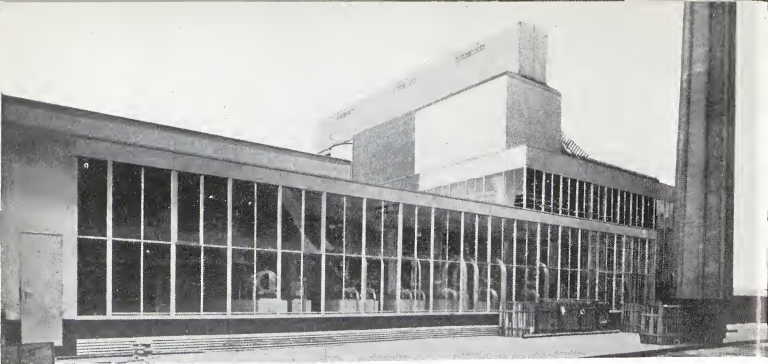
107. Terrace of the same apartment house.

108. W. van Tijen: Parklaan apartments, Rotterdam, 1934.

108a. Floor plan.



APARTMENT HOUSE PARKLAAN 1934 AT ROTTERDAM BY W. VAN TIJEN

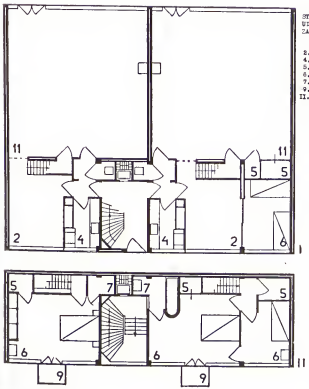


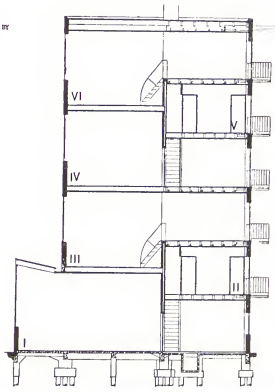
112. J. A. Brinkman and L. C. van der Vlugt: Engine room of Van Nelle Factory at Rotterdam, 1929.

113. S. van Ravensteyn: Signal box.

114. Philips factories at Eindhoven.

Studio apartments, Uiterwaardenstraat, 115-116-117. Zanstra, Symons & Giesen; Amsterdam, 1934. Interesting apartment house especially for painters and sculptors. The rooms are suitably lighted and large enough so that the artist can view his work from a distance.





tinuous open galleries. Stairs and elevators are concentrated at the ends. As usual in modern Dutch housing practice, each apartment has its own private balcony.

standards of utilitarian architecture

The Dutch government is concerned with every phase of environment, — with working conditions as well as with living quarters. Each factory, shop and office must be well supplied with light and air; if such high standards were applied to New York City, a good half of the work-places, including many of "modern" construction, would be found unsatisfactory.

Along with their insistence on high physical standards, the Dutch realize that even the most utilitarian buildings can and should be beautiful. Building should always be architecture, even when it is "only" a factory, a signal box, or a shaft tower; a vigorous culture cannot be reserved for the museums.

provision for special groups

Not only the manual laborer and the white-collar worker are considered in housing activity, but the professional and the artist as well. Coöperative building societies have done excellent work in this field, frequently with the assistance of the government. The architects Symons, Giesen and Zanstra, designed an interesting apartment house especially for painters and sculptors. The rooms are suitably lighted and large enough so that the artist can view his work from a distance. But the provision of spacious rooms for little money meant fewer rooms in all and a consequent loss of privacy.

post-war prospects

We have tried to show that architecture is the direct expression of the culture of a people and we have illustrated the fine architectural tradition of the Dutch with some chosen examples.

As this booklet is written, the desperate Germans are threatening to blow up the dikes as they retreat from Holland. The extent of such a calamity is difficult even to imagine. But the Dutch are a sturdy people, well accustomed to hardship, and, whatever happens, they will courageously rebuild their lives and their cities, and continue the work on which they have made such a brave beginning.

New York,
September 24,
1944.

THE HOUSING LAW OF 1901 AND THE HOUSING POLICY OF THE NETHERLANDS.

The housing law of 1901 is divided into eleven paragraphs, which are headed as follows:

1. Rules concerning the conditions with which dwellings or other buildings must comply. The communal council must state the conditions that have to be complied with: a) for the erection of dwelling-houses; b) for the total or partial modernization, alteration or enlargement of dwelling-houses; c) for the utilization of premises for housing purposes; d) concerning existing dwellings.

2. Particulars of number of dwellings. This paragraph contains provisions concerning the establishment of housing exchanges and the taking of a housing census. Every commune with more than 20,000 inhabitants is bound to establish a housing exchange.

3. Improvement of dwellings; overcrowding.

4. Condemnation of buildings as unfit for habitation, evacuation, closing and demolition. The communal authorities are empowered to cause dwellings to be improved, and, in so far as they are unfit for habitation and cannot be restored by repairs to a habitable condition, to condemn such dwellings as unfit for habitation and ensure their evacuation within a given period.

5. Diversion of housing accommodation from its proper purpose. This paragraph makes it possible in periods of housing shortage to prevent dwellings from being used for other purposes or demolished.

6. Expropriation. This paragraph governs the expropriation of estates, whether built on or not, for the requirements of town-planning. Expropriation may be ordered for the evacuation of built-up areas or for the removal of dwellings, if owing to the particular situation improvements cannot be achieved by any other method. Furthermore, land may be expropriated, if necessary, for the execution of a definite building plan established in the interests of housing.

7. Regulations concerning the building development of estates and the purpose for which they are to be used. In this paragraph, rules are laid down concerning the establishment of extension plans, building regulations, regulations referring both to the nature of the build-

ing development and to the use of land situated in the built-up area, and district planning.

8. Financial assistance from communes.

9. Financial assistance from the State. It is interesting to note that the loans are not limited to a specified proportion of the value of the buildings to be erected. The entire amount—i.e. 100% of the building costs—is advanced to communes and associations in the form of a loan.

10. Penalties.

11. Final provisions.

Concerning the financial paragraphs of the housing law we want to stipulate that municipalities are solely responsible to the State for the payment of interest and amortization, but they may secure themselves in respect of associations by instituting a first mortgage. Building by associations is based on co-operation between bodies that have sprung up from the community itself and the public authorities. The Government paid particular attention to the granting of loans for the evacuation of slums and the improvement of insanitary dwellings. In addition to the loans ordinarily accorded for building under the housing law, a sum of 80,000 florins was earmarked for annual grants for sum clearance. The deficit on the profit-and-loss account for buildings to be erected with the money was not to exceed 50 florins per annum. In this matter, the State and the commune were each responsible for half.

The town-planning clauses of the housing law provides: in communes with more than ten thousand inhabitants or in which the population has, in the last five years, increased by more than one-fifth, the communal council is bound to establish a development plan in which the destination of the land shown in the plan must be denoted either as a whole or by subdivisions. These plans are subject to the approval of the provincial council, which for that purpose consults the housing inspector.

When the councils of two or more communes desire to establish a district plan for their combined areas, they may agree to set up a committee for the preparation, execution and, if necessary, revision of the plan. A committee appointed to prepare and execute or to revise a district plan is bound to consider, above all, the interests of communications, trade and industry, as well as public interests, in-

cluding the preservation of open spaces. As far as possible, the following bodies are consulted: chambers of commerce and industry, the State and provincial waterway services, the managements of transport undertakings, the heads of industries and organizations or individuals representing public interests which might have to be safeguarded in the plan.

We may put at 40,000 the number of dwellings to be constructed each year.

The appreciable decline in the death-rate figures is undoubtedly due to the considerable improvement in living conditions attained since the beginning of this century. It is, too, connected with the rise in the standard of living and the improved social position of the working class. The deaths from tuberculosis per 10,000 of the average population amounted during 1901-1905 to 19.04 and during 1926-1930 to 8.68.

For the purposes of supervision, every communal administration must have at its disposal an official with adequate training who can advise it on all measures that it may be necessary to take regarding housing. To ensure that supervision in regard to the building and total or partial modernization of dwellings shall be effective, it must be carried out both before the granting of the building permit and afterwards, when building is in progress.

Since the entry into force of the housing law, associations and communes have built upwards of 200,000 dwellings in 1935. The method of letting is of great importance. The interests of housing are not served only by building a large quantity of dwellings and letting them at low rentals; if there is to be a real improvement in housing, they must be kept for those who need them, and it must be ensured that the occupants make the best possible use of them.

Accordingly, it is important not only to give preference to certain categories of intending tenants, but also quite definitely to refuse certain groups of applicants. The larger communes and a number of important building associations have engaged for these various duties specially trained women officials. Housing inspectresses play an important part in the administration of the property belonging to the communes and building associations. There are in the Netherlands different social training institutions in the towns which prepare girls for these duties.

As said before, building associations can obtain financial assistance from the authorities. This usually takes the form of an advance on favorable terms. (abstract from "The Housing Policy in the Netherlands, by H. van der Kaa, General Inspector of Health.)

Facts and Statistics on Housing in the Netherlands

LOANS

Building loans are repayable in 50 years, loans for the acquisition of land in 75 years. The interest is fixed at a rate corresponding to that at which the state secures its money. It is now 3½ per cent (in 1939). Besides these loans the Act empowers the Government to grant yearly subsidies. Half of these subsidies are paid by the government, the other half by the municipality. However, since 1924 yearly subsidies have been granted only for houses built in conjunction with slum clearance. Houses constructed apart from this must pay their way.

Amount-granted for evacuation of slums.

annual contribution by the Treasury	Year	number of dwellings
FL. 15.643	1925	431
25.464	1926	1026
53.436	1927	1759
29.544	1928	1102
29.841	1929	1069
54.811	1930	1771
46.927	1931	1714
6.192	1932	424
16.024	1933	
7.690	1934	449

HOUSING ASSOCIATIONS

Housing Associations are often in effect official bodies; 100% of their capital may be subscribed by the Authorities. The Housing Associations, catering for the better paid worker, are run without loss, the municipal housing, catering for the worker who cannot pay an economic rent, is run at a loss borne partly by the municipality and partly by the state. This applies only to the housing of the poorer workers. Since 1934 an attempt has been made to revise second mortgage facilities in such a way as to stimulate the building of houses for the lowest-paid workers. First and second mortgages together may be

granted up to 90% of the value of building and land; the amount of the second mortgage may not exceed Fl. 700.— on leasehold land and Fl. 900.— if the land is freehold, the maximum period 10 years, and the rate of interest 4%.

The following table shows the number of dwellings which have been put up since 1921 on new building land:

Year	number of dwellings on new building land	number built by private individuals	percentage of dwellings built by private individuals
1921	40,364	14,743	36.5
1922	45,496	24,936	57.0
1923	43,132	27,999	65.0
1924	46,712	34,295	73.5
1925	47,190	34,552	73.0
1926	48,833	41,068	84.0
1927	50,246	42,617	84.5
1928	47,335	40,558	86.0
1929	47,347	39,820	84.5
1930	51,501	44,024	85.5
1931	50,581	41,226	81.5
1932	42,014	36,129	86.0
1933	44,425	42,703	96.0
1934	52,600	47,684	91.0

The following table shows the number of dwellings for which advances have been granted since 1921 under the housing law:

Year	amount advanced	dwellings built by associations	communes	total dwellings
1921	Fl. 199,481,170	19,213	3,595	22,808
1922	44,034,733	4,735	1,832	6,567
1923	24,857,631	3,698	2,828	6,526
1924	10,269,719	1,553	1,110	2,663
1925	8,945,845	1,032	1,173	2,205
1926	5,824,904			1,200
1927	12,543,995			2,341
1928	14,854,038	1,979	1,219	3,198
1929	17,126,100			4,639
1930	18,130,086	2,552	1,362	3,914
1931	8,586,951	1,963	909	2,872
1932	3,352,618	767	320	1,087
1933	9,616,507			
1934	4,746,781	1,417	94	1,511

In Amsterdam societies are able nowadays to provide decent houses, paying their way, at rentals of less than Fl. 6.— a week, for a house. Proportional to income this would mean about $6.— in U.S.A. The incomes of the workers for which these houses are intended range between Fl. 24.— to Fl. 34.— a week, so that they pay about a fifth part of their income for rent.

The Government has prescribed of late that the houses shall not be let to persons with incomes exceeding 7 times the amount of the rent. Houses built by the municipality for former slum dwellers are in general about 20% lower.

SITE CONDITIONS

in Amsterdam:

The total area of parks, sports, grounds, public gardens, etc. is about 1,863 acres, i.e. 2.4 acres per 1,000 people. The following are the standards of open space per 1,000 people:

	present standard	desired standard in expansion projects
Parks	0.5 acre	0.9 - 1.1 acres
sports- and playgrounds	0.7 "	1 acre
allotments	0.5 "	1.2 "

Further recreation areas of 2.8 acres per 1,000 people are also considered desirable. There is easy access by train to the beaches, and open country can be reached about 2-3 miles from the centre.

in Rotterdam:

There are no density limitations. In the garden suburbs the usual density is 12-20 dwellings per acre, and in working-class and middle-class more central districts 20-40 per acre. Working-class housing schemes are usually in the outskirts of the city.

HOUSING CONDITIONS

Slum clearance is undertaken under the 1901 Housing Act, which was revised in 1934. The municipality has power to condemn a dwelling and fix a time limit of up to 12 months for its evacuation; the municipality may also give finantial aid to housing associations for clearance schemes, and State aid may be given directly to housing association for the municipality. These advances and interest must be repaid in at most 75 years.

A census in 1930 showed that 36% of the flats in the city contained only one bedroom besides a living room, 39% two bedrooms. In

order to make up for the shortage of larger dwellings 50% of new dwellings should in 1936 have 3 bedrooms, and 35% 2 bedrooms. The interior arrangement of many flats is affected by the practice of using built-in furniture which is attributed to the sea-faring tradition of those now living in cities; built-in cupboards are provided, and the absence of large wardrobes, etc. makes small rooms practicable.

Tenants applying for a dwelling must state their earnings and those of their wives and earning children; they are then given a dwelling with suitable accommodation in a scheme where the rents are in accordance with the family income. When it is known through the inspectors that a family's financial circumstances have improved, the family is moved to another scheme giving the same accommodation but at a higher rent. "Undesirable tenants" are only admitted to the new estates after spending 12-18 months, or until they have acquired satisfactory ways of living, in special probationary centres. In these centers there is communal accommodation including nurseries, wash-houses and communal bathrooms; rents are very low, i.e. 3-3½ guilders a week (i.e. 12-14% of the usual unskilled wage). Those in charge of this work claim that these schemes are a great success.

The cost of foundations has resulted in a tradition of narrow frontages and deep high rooms with high windows.* Steep staircases are also traditional and in many buildings cranes are provided for hauling furniture. In central schemes of block dwellings there are usually 4 stories of flats, with an attic used for storage and sometimes for workshops, and in some recent schemes a basement for pram and cycle stores. The ground floor often includes shops. Access is from staircases, sometimes without external ventilation, serving either one or two flats on each floor. It is common for the ground floor flats to have a separate door to the street. One staircase must not give access to more than nine flats. Standardization in all schemes is of the unit dwelling, with many variations in types of flats owing to the irregularity of blocks. Consideration of the size of families has resulted in the following percentages of accommodation being taken as a standard:

Old people's dwellings:	5%	
2 roomed dwellings:	10%	
3 " "	32.5%	
4 " "	4.5%	
Large family "	7.5%	(over 4 rooms)

*see page 56; results of later survey in 1936.

There are regulations which relate the number of rooms to the age, sex and relationships of the tenants. The following are the minimum standards for dwellings according to the Building By-Laws: for dwellings built in the centre of the city before 1910: 283 c.ft. per person; for other dwellings: 353 c.ft. per person; for children under 10 years: half these volumes. Only the volumes of living and bedrooms (excluding bed recesses) are included. For rooms without opening windows only half the volume may be taken; for rooms with opening windows or air shaft 1½ times the volume is taken. These standards are considered too low, and in the new by-law 32 sq. ft. of floor surface per person will be a minimum. The following are minimum sizes of rooms:

Living room: 172 sq. ft.
Single bedroom: 108 sq. ft.
2 bedrooms: 151 sq. ft. together
Kitchen: 43 sq. ft.
Bathroom: 32 sq. ft.
Shower: 10 sq. ft.
Lavatory: 9 sq. ft.

The height of rooms must be 8'-10' except for bathrooms and lavatories, which must be 7'-10'. The minimum height floor to floor is 9'-10'. The ratio of window glass to floor area must be at least 1:8; attic bedrooms may have 1:10. At least ¼ of the window must open. In block dwellings most bedrooms open off a passage. The living room always overlooks the street, whatever the resulting orientation.

Most dwellings have a recessed balcony, usually overlooking the courtyard. Kitchens are often reached from the living room. In cottages the living room almost invariably overlooks the street, and the kitchen is reached through the living room.

Dwellings and population at 1930 census.

Communes	number of dwellings	average number of persons per dwelling	% unoccupied
Amsterdam	199,661	3.52	3.70
Rotterdam	144,446	2.59	3.95
The Hague	130,428	3.31	3.28
Utrecht	36,957	3.33	4.09
Haarlem	30,945	2.45	3.78
Groningen	24,947	1.74	3.94
whole country	1,863,644	2.67	4.24

Surveys of dwellings, with one and two bedrooms:

	with two bedrooms		with one bedroom	
	adequate	inadequate	adequate	inadequate
Amsterdam	34.5%	3.2%	36.2%	4.6%
Rotterdam	37.5%	4.5%	27.8%	5.6%
The Hague	32.7%	1.6%	32.9%	1.8%
Haarlem	32.9%	2.4%	24.8%	3.4%
Utrecht	31.7%	3.2%	26.5%	4.1%
Groningen	32.8%	3.3%	27.7%	4.6%
whole country	31.6%	4.4%	26.6%	6.5%

(Abstracts from "Housing" A European Survey. Part Holland by A. Keppler, H. van der Steur, J. A. Brinkman).

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